



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/636,023	08/07/2003	Kuo-Yuin Li	LELI 3493	1020

321 7590 11/30/2005

SENNIGER POWERS  
ONE METROPOLITAN SQUARE  
16TH FLOOR  
ST LOUIS, MO 63102

EXAMINER
----------


NGUYEN, THANH NHAN P

ART UNIT	PAPER NUMBER
----------	--------------

2871

DATE MAILED: 11/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/636,023	Applicant(s) LI, KUO-YUIN 	
	Examiner (Nancy) Thanh-Nhan P. Nguyen	Art Unit 2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03 October 2005.  
 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.  
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-28 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
 6) ☒ Claim(s) 1-28 is/are rejected.  
 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
 10) ☒ The drawing(s) filed on 07 August 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) ☒ All b) ☐ Some \* c) ☐ None of:  
 1. ☒ Certified copies of the priority documents have been received.  
 2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                                                                             |                                                                                         |
|---------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                                                 | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                                        | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>3/3/05</u> . | 6) <input type="checkbox"/> Other: _____                                                |

## **DETAILED ACTION**

1. This communication is responsive to the RCE dated 10/3/2005.
2. Claims 20-28 are newly added; claims 1-28 are pending for the examination.

### **Drawings**

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "a polarizing beam splitter directing light from the polarizer toward a panel producing an image to be projected" in claim 20 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner,

Art Unit: 2871

the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

**Claim Rejections - 35 USC § 102**

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) The invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**Claims 1, 6, 10, 11 & 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Sato et al U.S. Patent No. 5,042,921.**

**Regarding claim 1,** Sato et al discloses a projection illumination device, comprising: a light source (103) providing parallel light beams along a light axis; a quarter-wave retardation (109) being disposed near the light source, and substantially perpendicular to the light axis; and a wire grid polarizer (108) being disposed parallel to the quarter-wave retardation, for being associated with the quarter-wave retardation to polarize the light beams from the light source, [see fig. 8].

**Regarding claim 6,** Sato et al discloses the projection illumination device as claimed in claim 1, wherein the light source further comprises a lamp (104) and a parabolic lampshade (105), of which the lamp is disposed at the focus of the parabolic surface of the lampshade for providing the parallel light beams, [see fig. 8].

**Regarding claim 10,** Sato et al discloses the projection illumination device as claimed in claim 1, wherein only p-polarized light can pass through the wire grid

Art Unit: 2871

polarizer, and the non p-polarized light that cannot pass through the wire grid polarizer is reflected, [see fig. 8].

**Regarding claim 11**, Sato et al discloses a projection illumination device, comprising a light source (103) having a reflecting surface (105); a retardation (109) generating a phase difference of a quarter period between light before and after passing through the retardation; and a polarizer (108) allowing light of a first polarity to pass through while reflecting light of a second polarity; wherein the light source, the retardation and the polarizer are arranged in a straight line; the light source emits a light beam passing through the retardation to the polarizer so that light of the first polarity in the light beam passes through the polarizer while that of the second polarity is reflected by the polarizer through the retardation to the reflecting surface and further reflected by the reflecting surface through the retardation to the polarizer, [see fig. 8].

**Regarding claim 16**, Sato et al discloses the projection illumination device as claimed in claim 11, wherein the light source further comprises a lamp (104) and a parabolic lampshade (105), and the parabolic lampshade has the reflecting surface, of which the lamp is disposed at the focus of the parabolic surface of the lampshade for providing a plurality of parallel light beams, [see fig. 8].

**Claim Rejections - 35 USC § 103**

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 2, 3, 5, 12, 13, 15, 21, 22, 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al in view of Yamagishi U.S. Patent No. 5,777,695.**

**Regarding claim 2,** it was well known that adhering layers together was to prevent Newton's rings. Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to have the quarter-wave retardation adheres to the illuminated surface of the wire grid polarizer for the benefit of preventing Newton's rings.

**Regarding claim 3,** Sato et al lack disclosure of the projection illumination device as claimed in claim 1, further comprising a transparent glass plate that adheres to the quarter-wave retardation.

Yamagishi discloses the projection illumination device comprising a transparent glass plate (28) that adheres to the quarter-wave retardation (29), [see fig. 7], for the benefit of improving the light utilization efficiency, [see col. 11, lines 45-46]. Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to have a transparent glass plate that adheres to the quarter-wave retardation for the benefit of improving the light utilization efficiency.

**Regarding claim 5,** to get 90 degree rotation for light recycling, the quarter-wave retardation has a slow axis, the wire grid polarizer has an absorption axis, of which the slow axis and the absorption axis define an included angle of substantially 45 degrees is required. Therefore, it would have been obvious to a person of ordinary skill in the art to have the slow axis of the quarter-wave retardation, and the absorption axis of the wire

Art Unit: 2871

grid polarizer define an included angle of substantially 45 degree for the benefit of improving the light efficiency of the liquid crystal display.

**Claim 12** is met the discussion regarding claims 11 & 2 rejection above.

**Claim 13** is met the discussion regarding claims 11 & 3 rejection above.

**Claim 15** is met the discussion regarding claims 11 & 5 rejection above.

**Claim 21** is met the discussion regarding claims 20 & 2 rejection.

**Claim 22** is met the discussion regarding claims 20 & 3 rejection.

**Claim 24** is met the discussion regarding claims 20 & 5 rejection.

**Claims 4, 7-9, 14, 17-20, 23, 25-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al in view of Okuyama et al U.S. Patent No. 6,634,755.**

**Regarding claim 4**, even though Sato et al lacks disclosure of the projection illumination device as claimed in claim 1, further comprising a lens array disposed between the light source and the quarter-wave retardation and being substantially perpendicular to the light axis, it would have been obvious to one ordinary skill in the art at the time the invention was made to have a lens array disposed between the light source and the retardation for directing the light beam toward other elements of the illumination device, as evidenced by Okuyama et al, [see fig. 9, element '1031'].

**Regarding claims 7-9**, similarly, it would have been obvious to one ordinary skill in the art at the time the invention was made to have the projection illumination device further comprising a condenser for unifying a shape of the light beams, and a relay for concentrating and collimating the light beam, as evidenced by Okuyama et al, [see fig.

Art Unit: 2871

9, element '106' & '108']; and further it would have been also obvious to one ordinary skill in the art to have the liquid crystal display projection system comprising a projection illumination device as in claim 1; and an imaging apparatus for receiving the polarized light from the projection illumination device in order to project an image; wherein the imaging apparatus comprises a color selector (105), two liquid crystal panels (110R, 110G, 110B) and a lens (112), of which the color selector is adapted for selecting the desired color and its complementary color, and the two liquid crystal panels are adapted for producing the image and projecting the image through the lens, [see fig. 9].

**Claim 14** is met the discussion regarding claims 11 & 4 rejection above.

**Claims 17-19** are met the discussion regarding claims 11 & 7-9 rejection above.

**Regarding claim 20**, Sato et al discloses a projection system comprising a light source (103) having a reflecting surface (105); a retardation (109) generating a phase difference of a quarter period between light before and after passing through the retardation; a polarizer (108) allowing light of a first polarity to pass through while reflecting light of a second polarity; wherein the light source emits a light beam passing through the retardation to the polarizer so that light of the first polarity in the light beam passes through the polarizer while that of the second polarity is reflected by the polarizer through the retardation to the reflecting surface and further reflected by the reflecting surface through the retardation to the polarizer, [see fig. 8].

Sato et al lacks disclosure of a polarizing beam splitter directing light from the polarizer toward a panel producing an image to be projected wherein light of the first polarity in the light beam passes through the polarizer to the polarizing beam splitter.



Okuyama et al discloses of a polarizing beam splitter (111) for directing light from the polarizer toward a panel producing an image to be projected wherein light of the first polarity in the light beam passes through the polarizer to the polarizing beam splitter, [see fig. 9]. Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to have a polarizing beam splitter in the projection system for directing light from the polarizer toward a panel producing an image to be projected.

**Regarding claim 25**, Sato et al discloses the projection system as claimed in claim 20, wherein the light source (103) further comprises a lamp (104) and a parabolic lampshade (105), and the parabolic lampshade has the reflecting surface, of which the lamp is disposed at the focus of the parabolic surface of the lampshade for providing a plurality of parallel light beams, [see fig. 8].

**Claim 23** is met the discussion regarding claims 20 & 4 rejection above.

**Claim 26** is met the discussion regarding claims 20 & 7 rejection above.

**Claims 27-28** are met the discussion regarding claims 20 & 9 rejection above.

### **Conclusion**

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Li U.S. Patent Application Publication No. 2005/0073653 discloses a projection system comprising a light source, a wave-plate and a polarizing beam splitter wherein a light source, a wave-plate and a polarizing beam splitter are not arranged in a straight line.

Art Unit: 2871

**Contact Information**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to (Nancy) Thanh-Nhan P. Nguyen whose telephone number is 571-272-1673. The examiner can normally be reached on M-F/9-5:30.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on 571-272-2293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

(Nancy) Thanh-Nhan P Nguyen  
Examiner  
Art Unit 2871

-- November 22, 2005 --

TN

  
ANDREW SCHECHTER  
PRIMARY EXAMINER